

CLAIMS

1. In an optical fiber amplifier in which an optical amplifying fiber is used as an optical signal amplifying medium and in which optical signals are amplified by multiplexing a pumping light into the optical amplifying fiber, the optical fiber amplifier being characterized in that it comprises a pumping module in which at least an optical signal input terminal, a pumping light source, a multiplexing filter for multiplexing both, and an output terminal of a multiplexed light wave are housed in one package and which is equipped with input and output fibers; an amplifying fiber module in which at least an optical amplifying fiber is housed in one package and which is equipped with input and output fibers; and a monitor module in which at least an input terminal of an amplified optical signal, an output terminal, a distribution filter for separating a part of the optical signal, a light receiver of a distributed optical signal are housed in one package and which is equipped with input and output fibers; the output fiber of the pumping module and the input fiber of the amplifying fiber module are connected; the output fiber of the amplifying fiber module and the input fiber of the monitor module are connected; and these modules are housed in one package.
2. A pumping module according to claim 1, characterized in that the pumping light source, the optical signal input terminal and the multiplexing output terminal are spatially connected in the pumping module, that the pumping module is a module in which, relative to an optical axis (referred to as a primary optical axis) that joins two optical devices of these, an optical axis (referred to as a secondary optical axis) of the remaining optical device crosses at an angle of 20 degrees or less, and that the multiplexing filter placed on this crossing point is constituted of a dielectric multilayer film.
3. A pumping module according to claim 1 or claim 2, characterized in that each optical device and the input and output terminals are fixed at

predetermined positions of a base member that houses these in the pumping module and that in the pumping module a filter device placed to have an angle that is a half relative to a crossing angle at a crossing point of a primary optical axis and a secondary axis is mounted on a seat that is finely movable in

5 a direction perpendicular to the primary optical axis.

4. A monitor module according to claim 1, characterized in that optical connections of the light receiver, the input terminal of the amplified optical signals and the output terminal are conducted by spatial connections in the

10 monitor module, that the monitor module is a module in which, relative to an optical axis (referred to as a primary optical axis) that joins two optical devices of these, an optical axis (referred to as a secondary optical axis) of the remaining optical device crosses at an angle of 20 degrees or less, and that the distribution filter placed on this crossing point is constituted of a dielectric

15 multilayer film.

5. A monitor module according to claim 1 or claim 4, characterized in that each optical device and the input and output terminals are fixed at predetermined positions of a base member that houses these in the monitor module and that in the monitor module a filter device placed to have an angle that is a half relative to a crossing angle at a crossing point of a primary optical axis and a secondary axis is mounted on a seat that is finely movable in

20 a direction perpendicular to the primary optical axis.

25 6. An amplifying fiber module according to claim 1, characterized in that the amplifying fiber module is one obtained by circularly winding an optical amplifying fiber and then subjecting this to a hermetic sealing with a laminated film having a lamination of metal and resin.

30 7. An optical fiber amplifier module according to claim 1, characterized in that the pumping module, the monitor module and the amplifying module are

housed in a package in a manner to have a lamination in a direction along a thickness thereof.